DOCUMENT RESUME

ED 464 987 UD 035 014

AUTHOR	Burgess, Simon; Gardiner, Karen; Propper, Carol
TITLE	Growing Up: School, Family, and Area Influences on Adolescents' Later Life Chances. CASE Discussion Paper.
INSTITUTION	London School of Economics and Political Science (England). Centre for Analysis of Social Exclusion.
SPONS AGENCY	Economic and Social Research Council, Lancaster (England).
REPORT NO	CASE-DP-49
PUB DATE	2001-09-00
NOTE	46p.
AVAILABLE FROM	Centre for Analysis of Social Exclusion, London School of Economics, Houghton Street, London WC2A 2AE, England, United Kingdom. Tel: 44 020 7955 6679; Fax: 44 020 7955 6951; e-mail: j.dickson@lse.ac.uk. For full text: http://sticerd.lse.ac.uk/Case.
PUB TYPE	Reports - Research (143)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	Adolescents; *Economic Impact; *Family Characteristics; *Family Influence; *Place of Residence; Poverty; School Demography; *School Statistics; Secondary Education; Young Adults
IDENTIFIERS	*School Influence

ABSTRACT

This study explored the relationships between adult economic outcomes and three key factors during adolescence: schooling, family background, and county of residence. The empirical analysis was based on data covering the period from 1979-1996. Data came from the 1979 National Longitudinal Survey of Youth. The study examined a sample of people ages 14-19 years in 1979. Researchers made estimates on the impact of family, school, and county when growing up on earnings capacity and poverty risk once participants reached adulthood. Overall, family, school, and county of residence, when analyzed separately, each exhibited significant associations with men's and women's outcomes in later life. The size and significance of these effects were very susceptible to controls for the other sets of background factors, indicating the strong link between these different aspects of people's lives when growing up. Family factors had the strongest explanatory power, followed by schooling variables. There was a strong correlation between the characteristics of area of residence and family and school. The results provide evidence that the advantage or disadvantage associated with family background is compounded by young people's experiences in school, and in some cases, area of residence. Tables are appended. (Contains 11 references.) (SM)

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ED 464 987

Growing up: School, family and area influences on adolescents' later life chances

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CASEpaper 49
September 2001

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Editorial Note and Acknowledgements

Simon Burgess is Professor of Economics at the University of Bristol and is an associate of CASE and CEPR. Karen Gardiner is a Research Fellow in CASE. Carol Propper is Professor of Economics at the University of Bristol, an associate of CEPR and co-director of CASE. The authors would like to thank John Hills and participants at the 15th Annual Conference of the European Society of Population Economics for helpful comments. The financial support of the ESRC Centre for Analysis of Social Exclusion at the LSE is gratefully acknowledged.

Abstract

This paper explores the links between school, family and area background influences during adolescence and later adult economic outcomes. The empirical analysis is based on data covering the period 1979 to 1996, drawn from the 1979 US National Longitudinal Survey of Youth. For a sample of individuals aged 14 to 19 in 1979, estimates are produced of the impact of family, school and local area when growing up, on earnings capacity and poverty risk once they reach adulthood.

JEL classification: I32, I21, J30
Keywords: family background, poverty, wages, impact of schooling, area effects

Non-technical summary

This paper examines the relationships between adult economic outcomes and three key influences during adolescence: schooling, family background and local area. We use a rich dataset, the National Longitudinal Survey of Youth, to tease out how these background factors may impact, separately and together, in their contribution to later earnings capacity and poverty risk for young adults in the US.

In general, family, school and area (US county) characteristics when analysed separately each exhibit significant associations with men's and women's outcomes in later life. Family factors are found to have the strongest explanatory power, with schooling variables being the next most important and area having the smallest effect. However, given that we expect the characteristics of individuals' families, schools and areas to be correlated it is important to re-estimate the effects within a combined model. This ranking of the importance of each background influence remains when jointly controlling for all factors. However, in explaining the variance of long run adult outcomes, area only adds significantly over and above family and school factors in the case of men's poverty. Hence there is strong correlation between the characteristics of the areas where people live and those of their family and school. These results provide evidence that the advantage or disadvantage associated with family background is currently compounded by young people's experience of school and, in some cases, local area.

1. Introduction

This paper is concerned with the impact of young people's background on their later life chances. We examine three key domains of influence: family, school and local area. Society recognises the importance of all three domains, with the state and parents making huge investments of time and money in young people. This is partly motivated by the recognition that where one starts in life potentially has implications for the rest of one's life, and the desire to level out the opportunities people face because of their background. This paper assesses the relative importance of these three domains in their implications for later life chances of adolescents in the US, focusing on earnings and poverty.

The task this paper sets itself is to quantify the impact of these three background influences on later outcomes. It does not attempt to develop or apply specific theories of precisely how background can determine earnings or poverty in adulthood. Such models of behaviour from a variety of academic disciplines already exist but imply a somewhat narrower (but more focused) approach than that taken here.[1]

We want to capture all the direct and indirect effects of each of the three key domains on our outcomes of interest. Hence, we do not separately allow for any other mediating influences, such as educational attainment. In so doing we are not controlling for any individual choices, behaviours or events in the intervening period between measurement of background factors and the measurement of adult outcomes. The justification for this is that these would be (at least partly) related to background. The aspects of behaviour in the intervening period which are independent of background will account for the variation in outcomes which remains unexplained in the context of our analysis.

We carry out this analysis on data for a sample of US individuals who were aged between 14 and 19 in 1979, drawn from the National Longitudinal Survey of Youth. From repeated interviews with the same individuals through to 1996 we have access to very detailed information on what kind of family and area they grew up in and the school they

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[1] On a range of related theories see Aber et al (1997), Haveman and Wolfe (1995) and Card and Krueger (1996).

attended, as well as how they fared economically once they reached their twenties and thirties.

Our approach uses multiple observations on earnings and poverty during adulthood to estimate a measure for each individual of two outcomes: their underlying earnings capacity and poverty risk. We then explore the extent to which the variation in these adult outcomes are significantly associated with the characteristics of three key influences: the individual's school, family and (non-school) local area during adolescence. The definition of local area we use is US county which has an average population size of 80,000. Each of the three domains when considered separately is found to be significantly related to adult outcomes for men and women, with family having the greatest explanatory power and area the least. When included together in the analysis there is evidence that the sets of background characteristics are highly correlated, with the result that area appears to have relatively little independent significant effect, after allowing for school and family information.

A thorough search of the literature did not produce any studies which have a similar approach to our own, in seeking to separately quantify the impact of family, school and area background characteristics on adult outcomes in the US.

The paper continues with a review of the relevant literature, followed by the conceptual framework in section 3. A discussion of our data and details of definitions used is provided in section 4. The results are then presented in section 5 and we finish up with our conclusions in section 6.

2. Literature review

In reviewing the empirical literature relevant to this paper it is perhaps not surprising that there are an overwhelming number of potentially useful studies. Hence the need to restrict the scope of our summary of findings. In particular we will only mention studies which focus on the US,[2] are concerned with outcomes for older adolescents and young

[2] An approach that has used UK data to consider the childhood antecedents of a wide range of adult outcomes at ages 23 and 33 is found in Hobcraft (2000).

adults, and where these outcomes coincide with ours: earnings and poverty.[1]

A thorough search of the literature did not produce any studies which have a similar approach to our own, in seeking to separately quantify the impact of family, school and area background characteristics on adult outcomes. In only very few cases did the design of the research control for all of these three domains and even then the intention was to isolate one particular influence, such as quality of schooling. In general, there is less evidence on adult outcomes compared with effects on children and adolescents. This is partly due to the very extensive data requirements of such empirical analysis, incorporating measurement of both early background characteristics of adolescents and subsequent economic outcomes for the same people, years later. Nevertheless, there are a considerable number of papers which evaluate the impact of (some) background factors on adult earnings, but the evidence on poverty as an adult outcome is much more limited.

In the typology used in their review, Haveman and Wolfe (1995) come close to our approach by considering the determinants of children's attainments under three categories: social investment choices, parental investment choices and own choices. Included in social investment choices are neighbourhood or state characteristics, such as the area's poverty rate and local policies towards abortion and welfare. However, they explicitly exclude the role of schooling; they also differ in isolating the effect of the individual's own behaviour.

Their key findings, based on six studies of the determinants of earnings, are that growing up in a poor family and/or with parents with relatively low education has a negative impact on later earnings. In some cases the influence of parental education is only transmitted via the individual's own choices concerning their educational career, but in others parents' qualifications have an additional significant effect.

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[1] For more extensive reviews of the literature, see Haveman and Wolfe (1995) which focuses on the impact of area and family background characteristics on children's attainments, Gephart (1997) concentrating on the role of local neighbourhoods, and Card and Krueger (1996) on the labour market effects of schooling. The outcomes most commonly analysed are educational attainment and teenage fertility.

In summarising the results pertaining to the local area they distinguish between labour market conditions and state laws concerning welfare and abortion, on the one hand, and living in a "good" or "bad" neighbourhood, on the other. In the case of the former, they conclude that economic incentives and the local legal framework do have an influence on earnings. The studies they review suggest that growing up in a "good" neighbourhood (eg. neighbours with less unemployment and welfare recipiency and more education and income) has a positive impact on earnings prospects. They also point to evidence of increasing negative marginal effects of poor neighbourhood quality.

One shortcoming of these studies on earnings, reviewed by Haveman and Wolfe, is that none of them takes account of the potential impact of schooling. The majority of the literature on the impact of schooling on later earnings, focuses on 'school quality', most often defined as resources per pupil. Summarising the results from eleven studies, Card and Krueger (1996) find that a ten per cent increase in school spending is associated with a one to two per cent increase in earnings for students in their later lives. In most cases this is after controlling for years of education. Since better schooling tends to encourage individuals to invest more in their education (see Card and Krueger, 1996), one would expect these effects to be even greater if, as in our approach, there are no controls for individuals' choices or educational attainment. Card and Krueger note that even the studies which take into account parental and area characteristics find a positive effect, although the 'area' characteristics are at state (rather than neighbourhood) level. There is also evidence that alternative measures of school quality, such as the pupil-teacher ratio, have some leverage in explaining adult earnings.

An important difference between studies on schooling effects is the level of aggregation of the school quality data. Most research on this issue has used state or district level information on school quality. Betts (1995) argues that it is more appropriate to use school level data and finds that this produces an insignificant relationship between adult earnings and school quality (as measured by teacher-pupil ratio, beginner teacher salary relative to average state earnings, and percentage of teachers with a Master's degree or higher).[4] Betts shows that state-level data are biased

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[4] Betts (1995) does however find a significant link between adult earnings and other non-standard measures of school quality: number of students enrolled at the school, percentage of disadvantaged students and percentage of

towards finding a positive significant relationship with earnings. Card and Krueger (1996) engage with this debate and instead explain the insignificance of Betts' results as due to the young age and small size of his population sample. In this paper we use the same dataset as Betts, which by now has significantly more observations on adult earnings, and hence can shed some further light on this debate.

In comparison to earnings, the evidence on how much school, family and area matter for one's chances of being in poverty during adulthood is extremely sparse. Hauser and Sweeney (1997) primarily focus on poverty as a background variable: does experience of poverty during adolescence affect later life chances. Of interest to us is that one of the later life chances they examine is poverty status in midlife (around the age of 53). They find that there is no significant relationship with any family level background variables, whether family poverty status during adolescence is included or not. The models they test do not control for schooling or local area characteristics and their dataset is a select group of individuals: a sample of men and women graduating from high schools in Wisconsin in 1957.

In light of our review of the existing research, the current paper makes a significant contribution in the following respects:

- within a unified framework produces estimates of the importance of the three key domains affecting adolescents' earnings and poverty prospects: family background, schooling and the local area.
- adds to the existing evidence on the role of area and family, by also taking in to account school characteristics.
- assesses the impact of schooling when controlling for family and, in particular, area characteristics at a more disaggregated level than has previously been done.
- contributes to the debate concerning the impact of schooling when school level data is used.
- provides much-needed evidence on the implications of background factors for poverty risk during adulthood, on which little research exists.

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students who drop out without completing grade 12. These school characteristics are included in our analysis - see section 4 below.

- finally, compared to the majority of studies discussed above we use a much greater range of characteristics on schooling, family and area background.

3. Conceptual framework

In this section we set out a broad framework for analysing the relationship between adult outcomes and background characteristics, and discuss the relevant conceptual issues.

Let us start with a consideration of what are commonly understood to be the determinants of adult outcomes. In the case of earnings, they are likely to be generated by the individual's long run earnings capacity, as well as age, local labour market conditions and random noise. Equation (1) represents this in more detail, where the earnings of adult individual i at time t are a function of a range of fixed and varying characteristics, including their personal traits, the quantity and quality of human capital, social capital such as informal networks, race, gender, age, the state of the Union they live in (characterising the labour market they face and provision of welfare etc.), and some unexplained noise.[3] Many of these relevant characteristics will generally be observable but others will not, the classic example being the individual's ability.

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[3] In equation (1) we represent the observable time-varying characteristics ('t' subscript) as only age and state. This is not to say that personal characteristics, and human and social capital are completely fixed, but once an individual has reached adulthood they only evolve slowly over time. In any case, this distinction is not critical for our framework.

$$\text{Earnings}_{it} = f\{\underbrace{\text{personal characteristics}_i, \text{human capital}_i, \text{social capital}_i, \text{race}_i, \text{gender}_i}_{Z_i}, \text{age}_{it}, \text{US state}_{it}, \text{noise}_{it}\} \quad (1)$$

Z_i is our measure of the individual's long run earnings capacity, having stripped out the effect of age and state. Hence, Z_i can be thought of as capturing permanent or average earnings and will include the influences of both observed and unobserved characteristics on earnings.

In the case of our other outcome of interest, poverty, a similar argument applies: by stripping out the effect of age and state we can identify the individual's underlying long run poverty risk. One obvious difference between the outcomes we consider is that earnings is clearly an individual outcome, whilst poverty is determined at the level of the household within which the individual is a member. In fact, poverty captures the combined effect of several adult outcomes – own labour market performance, but also household formation and fertility behaviour. Nevertheless, we can still think of the individual's poverty status as being a function of the same collection of characteristics as in equation (1), since these will include the individual's preferences concerning household formation, marital status, fertility and choice of partner (including their education and earnings potential).

We now turn to the key relationship of interest: that between adult earnings capacity, or poverty risk, represented by Z_i, and the individual's background when they were an adolescent:

$$Z_i = g\{\underbrace{\text{family background}_i}_{(F_i)}, \underbrace{\text{school characteristics}_i}_{(S_i)}, \underbrace{\text{local area characteristics}_i}_{(A_i)}, \text{race}_i, \text{gender}_i, Z_{pi}, \text{noise}_i\} \quad (2)$$

Equation (2) represents Z_i as a function of our observable background variables, grouped in to family (F_i), school (S_i) and local area (A_i). Also included are the individual's fixed observable characteristics, race and gender. In addition, we allow for the effect of $Z_{p(i)}$ which is the equivalent measure (of earnings capacity or poverty risk) for the individual's parents. This $Z_{p(i)}$ is intended to capture traits of the parents which may be unobservable (and hence not in F_i) and have an influence on Z_i. This transmission may be through a variety of mechanisms, including genetic inheritance, learned behaviours, the influence of parents' choice of what school their child should attend or where the family should live. The precise implications of these factors for our analysis are discussed in detail below.

One thing to emphasize about the factors included in equation (2) is that we do not consider the influence of any intervening behaviours or events by individual i after the time when they were an adolescent, at which point their background characteristics are measured. This is so as to estimate the total or 'gross' effect of family, school and area on the later outcomes. So, for example, we know that an intermediate outcome is educational attainment and this will affect earnings but educational attainment will itself be related to the background characteristics. By not including it in our framework, we are picking up both the direct impact of family, school and area on earnings and poverty, and also the indirect effect, via educational attainment.

Having set up this broad framework, we now make reference to it in discussing the key conceptual issues involved:

(i) Family, school and area characteristics are likely to be highly correlated

We know that families are not randomly allocated to areas and schools. Hence, family, school and area characteristics are likely to be related to the behaviour of the parents and the choices they make about which school their offspring attend and where the family should live.

The observed correlation between the three key background influences is at the heart of this paper. By looking at the links between outcomes and these three sets of factors, we will explore to what extent they are correlated or overlapping, and how much each set contributes (over and above the others) to adult outcomes when we control for the entire set. This is of interest for two main reasons:

(a) The extent of correlation between these three sets of factors tells us something important about people's backgrounds. Are those individuals from disadvantaged family backgrounds (in terms of earnings and poverty prospects in adulthood) also attending schools and living in areas with characteristics associated with negative outcomes? The answer to this indicates whether one's 'start in life' provided by one's family tends to be enhanced or dampened by experience of school and local neighbourhood, and more generally has implications for equality of opportunities.

(b) In the context of this area of academic research, the extent of correlation between these background factors provides insight in to appropriate methodologies. In the event that these sets of factors are associated it provides empirical support for the need to control for the full range of characteristics, to avoid the bias in results from dealing with any one influence in isolation.

We will carry out our analysis using the observable characteristics available in our dataset (discussed further below). There are further issues which merit discussion in the context of this kind of study, concerning the adequacy of these observable variables in capturing the relevant relationships. These are reviewed below, with reference to the approach used in this paper:[6]

(ii) The simultaneity issue

In general, studies of how adolescents are affected by their environment – at home, at school and where they live – face the potential problem of simultaneous causation. The issue here is that adolescents interact with their environment and in so doing may affect it, as well as being affected by it. For example, the individual behaviour of the adolescent could be instrumental in decisions of the parents about whether to have more children or to find paid work outside the home. In the context of equation (2) above, this would be represented by the inclusion of Z_i in the determinants of F_i, S_i and A_i.

One strength of the analysis in this paper is that our results are not subject to the simultaneity problem. It is avoided by only focusing on outcomes during adulthood, so that a considerable amount of time has

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[6] See Duncan and Raudenbusch (forthcoming) for a fuller discussion, including possible methodological innovations.

elapsed between the period when the dependent variables are measured (adulthood: aged 23 and above) and the time when the independent variables are recorded (adolescence: aged 14 to 19).

(iii) The omitted-context-variables issue

This is the standard omitted variables problem: if any family, school and area characteristics are omitted which are relevant for Z_i and also correlated with the variables we do observe, this will result in biased coefficients on F_i, S_i and A_i. In the context of equation (2) this would be represented by the inclusion of additional sets of family, school and area characteristics (call them F^*_i, S^*_i and A^*_i) which we do not observe but which are correlated with F_i, S_i and A_i.

It is very difficult to determine to what extent this may be a problem in the case of our analysis. We can however gain some reassurance from the fact that we have a very rich dataset, with a considerable range of characteristics available for each of our three key sets of background factors: family, school and area. A further fillip for our approach is that we are not seeking to distinguish between particular models of the precise mechanism by which background factors have an impact, of the kind referred to in the introduction. Instead, we are looking only to estimate the total impact of each of our three domains, where omitted variables may be less of a concern.

(iv) The endogenous membership issue

Families and even the adolescents themselves will have an influence in choosing the area where they live and the school they attend, which raises the possibility that school and area characteristics are likely to be endogenous to the family. In this case there is a causal relationship running between the family and their local area and their school. If the family characteristics which are relevant to the choice of area and school are omitted, the estimates of the influence of the three sets of factors will be biased. To be clear, the issue of endogeneity is methodologically equivalent to the omitted variables issue but conceptually distinct. So, in equation (2) this is represented by the inclusion of the extra set of family characteristics $Z_{p(i)}$ which we do not observe. Thus far the example is the same as for the omitted variables issue. But in the case of endogeneity we know that the omitted variables ($Z_{p(i)}$) will definitely be correlated with observed factors (S_i and A_i), since the former is in part a cause of the latter.

The direction of bias arising from endogeneity is not clear. We can consider two illustrations of how families might choose area and schools to demonstrate that the bias arising from endogeneity might lead us to either overestimate or underestimate the influence of area and school relative to family.[7]

In the first scenario, the effect of school and area are underestimated. A two parent family choose to live in a poorer (and cheaper) area with only one parent employed outside the home, rather than living in a better off (and more expensive) neighbourhood with both parents in paid employment. The school in the poorer area offer lower chances of academic success than the schools in the richer area. Given the choice to locate the family in the more deprived area, the parent who stays at home can spend additional time with their children assisting their development, to offset the negative impact on the children of the poorer area and school. In the context of this example it is necessary to control for parental time spent with children to be able to identify the negative impact of the poorer area and school. Otherwise, the coefficients on area and school will be biased towards zero; the analysis would also fail to capture the full extent of the positive role of the family.

In the second example we consider the case where one would be likely to wrongly identify a significant area effect when this should instead be attributed to the influence of the family. Here, the unobserved characteristic is some measure of parental capacity. Parents with greater parental capacity may choose to live in a better off area so as to be able to send their offspring to higher performing schools. Without taking account of some measure of this concern of parents for their children's development, the positive impact may be assigned to the area or school rather than to the influence of the parents themselves.

In this paper we do not take any explicit steps to try to deal with the issue of endogeneity. Whilst we have a variety of characteristics of the family, we do not know about parental time spent with children, for example. As the examples presented show, we cannot predict whether the bias this induces will tend to under- or over-estimate the effects of school and area, relative to family background factors.

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[7] These illustrations are adapted from examples given in Duncan and Raudenbusch (forthcoming).

To summarise, in this paper, in common with most other studies of this kind, we do not claim to address all the issues which arise when trying to identify causal relationships between an adolescent's environment and their later economic outcomes. Hence, the significant associations we identify in our results can be thought of as indicative of the key relationships whilst still requiring further research to isolate precise estimates of the causal influences of family, school and local area.

4. Data and Definitions

(i) Dataset

The data we use in this paper are taken from the National Longitudinal Survey of Youth 1979 (NLSY79).[5] This is a US panel dataset running from 1979 containing data on 12,686 people, a representative sample of those aged 14 to 22 in 1979. Sample members were interviewed annually until 1994 and every other year thereafter; we use data through to 1996. For our purposes we require detailed information on both individuals' adult outcomes and background characteristics (of their school, family and area) during adolescence. The NLSY is an extremely rich dataset which is well-suited to such data requirements: as well as providing repeated observations on each person's earnings and poverty status during adulthood it includes a broad range of information concerning each of the three key background influences when growing up. This is important since the greater the detail and range of the data we use, the less likely it is that our results will be tainted by the methodological problems discussed in the previous section. To describe the particular subsample of the NLSY we use for our analysis, it is first necessary to discuss the individual indicators we focus on in this paper.

(ii) Adult outcome variables

The outcomes we are interested in are two key measures of economic well-being during adulthood: poverty and real earnings. For our purposes we define adult outcomes for those aged 23 or above. There are two main justifications for this age cut-off. Firstly, we want our sample to have more or less completed full-time education. Secondly, there is a variety of evidence that neither the returns to the quantity and quality of education (Card and Krueger, 1996) nor the influence of

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[5] For more information see Bureau of Labor Statistics (2000).

family background (Jencks and Mayer, 1990) are apparent in earnings in very young workers.

Our measure of earnings is adjusted for inflation (1996 US $) and is the total income from wages and salary in the past calendar year before any deductions. By using a measure of annual earnings the outcome captures differences in hours worked and periods of unemployment/inactivity as well as wage rates. Poverty status is based on the US official poverty definition, an absolute measure which depends upon family income, and family size and composition.

(iii) Adolescent background variables

We want to look at how these constructed measures of adult outcomes relate to environmental factors at an earlier age. As well as needing to know individuals' fixed observable characteristics (sex, race and age), we are interested in three distinct key childhood influences: family background, schooling and local area. In so far as it is possible we want consistent measures of these influences across people. The nature of the data means that we only have many of the variables of interest recorded for a single point in time. In the majority of cases we use the characteristics as reported for the year 1979, when our sample were aged 14 to 19. For a few of the family background variables they relate to the year in which the sample member was aged 14 (see Table 1).

A complete list of the background characteristics we use in our analysis is given in Table 1 under the three relevant headings. More generally our choice of variables was motivated by the desire to utilise the broad range available in our dataset, informed by the evidence from existing literature.

The eleven school characteristics come from the 1980 high school survey which gathered information on the secondary school attended by respondents in 1979. We use the school specific information but not the data on the respondent's own performance. The variables can be thought of as falling in to three main categories. Firstly, measures of resources: pupil-teacher ratio, books per pupil, percentage of teachers with higher level qualifications, beginner's teacher salary and number of pupils enrolled in the school. Secondly, indicators of pupils' characteristics: percentage of pupils who are disadvantaged (according to official criteria), black, hispanic and female. Thirdly, there are estimates of school efficacy: percentage of 10th grade students who drop

out and average attendance. The first group represent direct policy instruments, whilst the others can only be influenced indirectly.

The eleven family variables concentrate on the parents' characteristics, education, out of work and member of a professional occupation (for family heads only). We also look at family structure: number of siblings and whether a lone parent family. Thirdly, there are some broader indicators of the nature of the home environment in which the adolescent has been brought up: whether the family receive newspapers and magazines, and has the child been raised in the Baptist religion.[9]

The nine area descriptors are characteristics of the 'county' where the individual lives in 1979. These include economic indicators: median family income, family poverty rate and the unemployment rate; demographic characteristics of residents: percentage who live in an urban area, are black, live in families with a female head, and the marriage and divorce rate; and a non-economic measure of area 'quality', the crime rate.

A US county has an average population size of 80,000 people (but this varies considerably across counties). In studies of area effects the appropriate geographical unit will depend upon the kinds of mechanisms being examined. For example, in the case of peer group influences one may think that the relevant area would be rather small, perhaps just a few neighbouring streets. But to take another example, researching the impact of local institutions on local people may require consideration of a much larger region. In this paper we do not focus on particular transmission mechanisms of the local area but it should be noted that the individual's county may be too aggregated an area to capture all potential influences of their immediate neighbourhood.

Table 1: School, family and area characteristics in the NLSY

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[9] The reason only those raised in the Baptist faith (the single largest religious group in our sample) were separately identified was because of the need to limit the number of variables included in the analysis.

School	Family	Area (county)
— pupil-teacher ratio — books per pupil — percentage of teachers with higher level qualifications (master's degree or above) — beginner teacher's salary — number of pupils enrolled in the school — percentage of pupils who are disadvantaged — percentage of 10th grade pupils who drop out of school — percentage of pupils who are black — percentage of pupils who are hispanic — percentage of pupils who are female — percentage of pupils who attend	— mother's education (highest grade completed) — father's education (highest grade completed) — mother not in work — father not in work — whether head (if female) is a professional* — whether head (if male) is a professional* — lone parent family* — number of siblings — family receive magazines* — family receive newspapers* — religious (Baptist)	— median family income — family poverty rate — unemployment rate — crime rate — marriage rate — divorce rate — percentage of residents who live in an urban area — percentage of residents who are black — percentage of family heads who are female

Note: All measured in 1979, unless indicated by *, in which case measured at age 14.

One further word to guide interpretation of our findings on area effects: in many discourses the influence of the school one attends would be called an area effect, given that schools have a fixed geographical location and usually serve local people. Our framework separates out the influence of school on adult outcomes, so by 'area' we mean non-school local factors. One advantage of the fact that the areas we use are typically larger than a 'local neighbourhood' and therefore do not coincide with the geographical basis of the school is that it improves the likelihood that we can properly distinguish the influence of the area from the influence of the school.

(iv) Description of sample

To return to the issue of the sample of the NLSY we use for our analysis, Table 2 gives details of the sample restrictions we impose. Firstly, we

introduce an age restriction, limiting the sample to those who are aged 19 or less in 1979. Given that most of the background characteristics are recorded during a particular year, 1979, we want the individuals to be of a similar age. We dropped all young people of Hispanic origin due to insufficient sample sizes.

Up to this point our restrictions are about defining the sample we are interested in – let us call this the 'intermediate sample'. But then we had to impose conditions relating to missing values for the variables of interest, where there's a concern that the basis for dropping observations may be non-random. In particular, we require individuals to have at least four observations of poverty and earnings when they were aged 23 or above to calculate our outcome measures. One advantage of our approach is that the maturity of the sample means that we are not restricted to looking at poverty and earnings at only a single point in time and instead can construct outcome measures based on multiple observations for each adult.

Table 2 : Description of sample restrictions

Sample restrictions	**N**
Initial sample	12,686
Drop if older than 19 in 1979	(3,792)
Drop hispanics	(1,489)
Intermediate sample	7,405
Drop if <4 observations on earnings and poverty for ages 23 and above	(1,571)
Drop if missing values for selected dependent variables (as used in Table 4)	(3,891)
Final sample	1,943

As is shown by Table 2, the sample restrictions necessary to carry out our analysis reduced the number of observations considerably: ideally we would carry out our analysis using the 7,405 people in the intermediate sample, but of these we have adequate information for just 1,943. This clearly raises issues about the representativeness of our final sample. Hence, Table A1 in the Appendix compares the characteristics of the intermediate and final samples. It presents means of age in 1979, and

earnings and poverty status at age 25[10] for the two samples with the number of observations in brackets,[11] separately by race and sex groups.[12] Where the means for a particular variable are significantly different between the two samples at the 95% level, the figures are given in bold.

One striking fact is that when we split the sample by sex and race group, it shows that relatively twice as many blacks have been dropped than whites. Within the groups however, the means are more often statistically similar. In general, the final sample tends to be very slightly older (presumably because older individuals are more likely to meet the minimum number of observations on earnings and poverty criterion), higher earning and less poor. The fact that the final sample is not totally representative should not bias our findings, given that we include controls for observable characteristics. However, if relevant unobservable characteristics of the omitted observations are different from those of the final sample this may distort the results.

In addition, an equivalent examination of all the background variables from Table 1 looked for significant differences in mean values for the final and intermediate samples (figures not shown).[13] Relatively, whites in the final sample are more likely to differ in terms of family

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[10] This is a simple indication of how the outcome measures differ between the two samples given that the intermediate sample who are not in the final sample have missing information. A relatively young age was chosen since the intermediate sample are more likely to attrite than the final sample.

[11] The definition of the final sample does not require observations to necessarily have non-missing poverty and earnings at age 25. Hence, the number of observations for these variables differs even for the final sample (age is always non-missing for the final sample).

[12] Although weights are provided with the dataset to adjust for differential selection, the results in the table are not weighted so as to give a transparent record of how the final sample is different from the intermediate sample.

[13] The final sample have significantly fewer black pupils in their schools (all groups except white women), are less likely to be in a lone parent family (all groups), have fewer siblings (whites), have more highly educated parents (white women), are more likely to have magazines at home (whites), live in areas with fewer female-headed families (all groups except white women), fewer black residents (men), a higher marriage rate (black men), fewer urban residents (black women), and a lower crime rate (black women).

background compared with whites in the intermediate sample, whereas blacks in the final sample tend to live in less disadvantaged areas relative to blacks in the intermediate sample. Table A2 in the Appendix provides correlation coefficients between all the background variables for the final sample. Most of them are reasonably low (suggesting that multicollinearity should not be a problem in the multivariate analysis), with only seven coefficients (out of 465) greater than a half. In these seven cases at least one of the pair of variables is an area characteristic, where inevitably there is less variation in the data than for the school and family descriptors.

(v) Estimation procedure

There are two distinct stages to the estimation procedure. The first stage involves the construction of the outcome measures for both earnings and poverty, as represented by equation (1) in the conceptual framework. Using a fixed effects ordinary least squares procedure, multiple observations of earnings and poverty (when aged 23 or above) are regressed on age and state of residence.[14] By conditioning on age and state, we control for the fact that people are at different stages of the life-cycle and face a variety of labour market conditions which will affect their earnings.[15]

The estimated 'fixed effect' from the regression procedure, a single value for each person, is taken to be the outcome measure as represented by Z_i in equation (1). This can be thought of as an indicator of the individual's underlying poverty risk or earnings capacity, having removed any age trend or variability associated with state. The implication for our results is that any association we find between adult outcomes and the local area's characteristics is not picking up any state-level effects, since these have already been stripped out. Descriptive statistics for the two outcome measures are provided in Table A3 in the Appendix.

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[14] Although poverty status is a dichotomous variable, ordinary least squares was considered appropriate; the use of logit or probit would have resulted in the exclusion from the sample of people who are always observed with the same poverty status (either poor or non-poor).

[15] Here we are effectively treating the state one lives in as exogenous. It is however interesting to note that there is evidence that labour market mobility is related to state differentials in returns to skill (see Borjas et al (1992). For the purposes of this paper, we are interested in the impact on earnings capacity or poverty risk of the more local 'area'.

Having constructed our outcome measures for each person in stage one, the second stage of the analysis produces our main results, as represented by equation (2) in the conceptual framework. Each individual now has a single value for their earnings outcome and one for their poverty outcome[16] and data on their school, family and area background characteristics for one in point in time. Using ordinary least squares and controlling for sex and race, each outcome measure is regressed on the three sets of background variables in all possible combinations: separately, in pairs and all three together. It is the results from stage two which are presented in the following section of the paper.

5. Results

This section presents our results. The purpose of Tables 3a to 3d is to indicate the explanatory power of each of our three sets of regressors, under all possible combinations of regressors. This is indicated by the 'F' statistic and its associated 'p' value for each set (in italics if not significant). In addition, the adjusted R^2 summarises the explanatory power of the whole regression, which also always includes race as a control.[17] The results are presented separately for men and women and the two outcomes: earnings capacity and poverty risk.

The first three columns of each table show the association between earnings capacity or poverty risk, and each of the three sets of background variables separately. These show that in almost every case there is a significant relationship between each of set of regressors and the outcome. This is to say that family, school and area characteristics in adolescence are indeed found to be related with later adult earnings and poverty. When the sets are included separately, a very consistent ranking emerges: family characteristics explain the most, followed by school, with area factors explaining the least. It is interesting that this does not vary by gender or outcome. Whilst the adjusted R^2 for area

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[16] Note that following stage one, the outcomes measures used as dependent variables in stage two are both continuous variables.

[17] If *all* black individuals were to live in disadvantaged areas then the race variable would be likely to pick up some of the school and area effects but there is sufficient variation in the data to avoid this problem.

(column three) is always lower than that for school and area (columns one and two), only in the case of women's poverty is the explanatory power of the area regressors found to be insignificant.

As we have noted, the characteristics of individuals' families, schools areas are likely to be correlated. So it is relevant to examine how the explanatory power of these sets is affected when jointly included in the regressions.

Examining the sets of factors in pairs again produces a very consistent picture across men's and women's outcomes. School and family together have the greatest explanatory power, followed by family and area, with school and area explaining least of all the pairs.

For the results as a whole, the different combinations of sets show that the family and school regressors are always significant but the area characteristics only sometimes.

Taking the case of earnings first, the findings for men and women are remarkably similar: family and school play a significant role across all columns but area is never significant when included with another set. In fact the run with the greatest explanatory power is school and family together (column four). For both men's and women's earnings family, is by far the most important set of factors, with school mattering less (but relatively larger effect for men's than women's earnings).

The genders are more divergent in terms of the relationship between their backgrounds and adult poverty (Tables 3c and 3d). For men, all three sets are significant and this finding is robust across the columns. This implies that family, school and area all have a separate link with men's poverty. For women, however, area characteristics are never found to be significant. Again, there is evidence that family is relatively more important for women than men, so that school and (in the case of poverty) area are relatively more important for men.

The discussion thus far has talked about the relative importance of the factors across outcomes and genders. In terms of absolute effects, these variables can explain about 14% of the variation in men's earnings and poverty, but slightly less of women's earnings and more of their poverty.

In summary, there is evidence that there is an association between family, school and area and later outcomes when examined separately. The size and significance of these effects are very susceptible to controls for the other sets of background factors, indicating the strong link between these different aspects of people's lives when growing up. However, family and less importantly school remain independently significant; the evidence for area is weaker.

Table 3a: Men's earnings capacity

		School	Family	Area	School & Family	School & Area	Family & Area	School, Family & Area
SCHOOL	F	4.73			2.01	3.36		1.77
(11 vars)	Prob>F	0.000			0.025	0.000		0.054
FAMILY	F		9.70		6.77		8.12	6.39
(11 vars)	Prob>F		0.000		0.000		0.000	0.000
AREA	F			2.87		*1.26*	*1.16*	*0.88*
(9 vars)	Prob>F			0.002		*0.255*	*0.319*	*0.542*
Adjusted R squared		0.074	0.122	0.050	0.133	0.076	0.124	0.132
number of observations		948	948	948	948	948	948	948

Table 3b: Women's earnings capacity

		School	Family	Area	School & Family	School & Area	Family & Area	School, Family & Area
SCHOOL	F	3.86			1.62	2.68		1.68
(11 vars)	Prob>F	0.000			0.087	0.002		0.073
FAMILY	F		8.85		6.44		7.38	6.27
(11 vars)	Prob>F		0.000		0.000		0.000	0.000
AREA	F			2.36		*0.97*	*0.75*	*0.83*
(9 vars)	Prob>F			0.012		*0.467*	*0.661*	*0.586*
Adjusted R squared		0.045	0.094	0.027	0.100	0.045	0.092	0.099
number of observations		995	995	995	995	995	995	995

Coefficients in italics if insignificant: [Prob>F] > 0.10.

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Table 3c: Men's poverty risk

		School	Family	Area	School & Family	School & Area	Family & Area	School, Family & Area
SCHOOL	F	6.17			2.76	5.07		2.58
(11 vars)	Prob>F	0.000			0.002	0.000		0.003
FAMILY	F		11.03		7.38		9.55	6.88
(11 vars)	Prob>F		0.000		0.000		0.000	0.000
AREA	F			3.54		2.28	1.96	1.76
(9 vars)	Prob>F			0.000		0.016	0.041	0.072
Adjusted R squared		0.076	0.123	0.044	0.141	0.087	0.131	0.147
number of observations		948	948	948	948	948	948	948

Table 3d: Women's poverty risk

		School	Family	Area	School & Family	School & Area	Family & Area	School, Family & Area
SCHOOL	F	3.53			1.74	2.60		1.75
(11 vars)	Prob>F	0.000			0.061	0.003		0.058
FAMILY	F		8.50		6.55		7.46	6.51
(11 vars)	Prob>F		0.000		0.000		0.000	0.000
AREA	F			*1.59*		*0.80*	*0.49*	*0.52*
(9 vars)	Prob>F			*0.113*		*0.615*	*0.885*	*0.864*
Adjusted R squared		0.106	0.151	0.086	0.158	0.102	0.147	0.154
number of observations		995	995	995	995	995	995	995

Coefficients in italics if insignificant: [Prob>F] > 0.10.

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Whereas Tables 3a to 3d summarised the total explanatory power of each of our sets of background variables, the purpose of Tables 4a to 4d is to illustrate what is going on 'behind' these results. We want to give a feel for the relationship between our outcomes of interest and the school, family and area characteristics used in the analysis. Whilst we do not put a strong emphasis on the role of particular variables (because of multicollinearity and possible omitted variable bias) we can show that we do find the kinds of associations we might expect.

To do this it was necessary to analyse a pared down set of family, school and area variables, given our limited sample sizes. (The sample size had increased here over Table 3 because we require non-missing values for a smaller set of regressors.) Furthermore, while race was included as a control in the Table 3 runs, exploratory runs showed that interactions between race and the other regressors were often found to be significant. Hence these results were run separately by race and sex group. The much smaller samples for blacks (about a quarter of the number of whites) means that very few variables are statistically significant, so only results for whites are presented. Tables 4a and 4b deal with earnings capacity for white men and women. Tables 4c and 4d illustrate the relationship for white men's and women's poverty risk. Significant coefficients are indicated in bold in the tables throughout.

With only one exception (coefficient on pupil-teacher ratio for white women's poverty risk) all of the coefficients which are significant have the expected sign. So, for the school variables the pupil-teacher ratio, percentage of disadvantaged pupils and the drop out rate are associated with less earnings and more poverty. The opposite is true for the percentage of teachers with higher level qualifications. In the case of family characteristics, mother's and father's education is associated with positive outcomes, but more siblings with lower earnings and higher poverty. White women from a lone parent family experience significantly higher poverty. Again, the relationships with area (as measured by average family income and the unemployment rate) are as we would expect, although these are only robust for earnings.

Tables 4a and 4b on earnings and Tables 4c and 4d on poverty are supportive of the findings from Table 3 that family variables are the most important and robust, particularly for women. It also appears that school characteristics play a relatively greater role in men's earnings

than women's. For the school and family variables there is remarkable stability in the size of coefficients across the different specifications.

For the particular area regressors in Tables 4a to 4d (a much narrower specification compared to Table 3), there is some evidence of a robustly significant effect of area for men's and women's earnings but no significant area impact on poverty when other sets of regressors are included.

Table 4a: White men's earnings capacity

	School	Family	Area	School & Family	School & Area	Family & Area	School, Family & Area
SCHOOL							
pupil-teacher ratio	**-309.72** (97.75)			**-245.88** (97.13)	**-308.86** (99.15)		**-241.49** (98.82)
disadvantaged pupils (%)	**-64.13** (27.74)			-34.93 (27.95)	-28.21 (30.71)		5.58 (30.66)
tenth grade drop-out rate	**-54.25** (23.26)			**-47.92** (22.92)	**-53.83** (23.19)		**-47.79** (22.88)
teachers (%) with higher qualifications	**54.84** (20.87)			**-47.92** (22.92)	**-53.83** (23.19)		10.44 (22.97)
FAMILY							
mother's education		**950.45** (241.73)		**814.18** (242.25)		**913.96** (240.84)	**819.65** (242.00)
number of siblings		**-378.44** (252.81)		**-427.03** (251.45)		**-384.59** (251.98)	**-428.37** (251.72)
father's education		**392.30** (174.98)		271.31 (178.04)		269.35 (178.33)	226.41 (179.11)
lone parent family		**-860.37** (1597.83)		**-618.39** (1589.70)		**-995.55** (1592.41)	**-748.18** (1588.64)
AREA							
median family income			**1.08** (0.24)		**0.79** (0.29)	**0.70** (0.25)	**0.63** (0.29)
unemployment rate			-420.75 (307.67)		-139.90 (319.74)	-410.28 (302.47)	-209.30 (316.60)
number of observations	1011	1011	1011	1011	1011	1011	1011

Coefficients in bold if significant: $p < 0.10$.

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Table 4b: White women's earnings capacity

	School	Family	Area	School & Family	School & Area	Family & Area	School, Family & Area
SCHOOL							
pupil-teacher ratio	37.48 (94.71)			-19.00 (91.54)	-2.80 (95.57)		14.62 (92.42)
disadvantaged pupils (%)	**-109.44 (24.38)**			**-69.85 (23.98)**	**-77.53 (27.76)**		**-55.11 (26.93)**
tenth grade drop-out rate	-8.03 (19.66)			-5.31 (18.99)	-11.18 (19.65)		-7.43 (18.99)
teachers (%) with higher qualifications	1.90 (17.67)			-12.97 (17.20)	-10.27 (18.81)		-15.61 (18.22)
FAMILY							
mother's education		**862.20 (191.88)**		**819.75 (191.95)**		**845.74 (191.71)**	**821.94 (191.92)**
number of siblings		**-446.71 (194.96)**		**-447.22 (194.46)**		**-453.28 (194.55)**	**-446.44 (194.54)**
father's education		**509.43 (141.23)**		**458.98 (143.40)**		**466.48 (144.19)**	**458.90 (144.65)**
lone parent family		688.40 (1269.30)		603.64 (1267.52)		726.15 (1265.65)	686.37 (1265.80)
AREA							
median family income			**0.53 (0.19)**		0.28 (0.23)	0.08 (0.19)	0.05 (0.23)
unemployment rate			**-713.48 (244.27)**		**-565.08 (251.94)**	**-685.66 (235.62)**	**-590.13 (243.48)**
number of observations	1080	1080	1080	1080	1080	1080	1080

Coefficients in bold if significant: $p < 0.10$.

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Table 4c: White men's poverty risk

	School	Family	Area	School & Family	School & Area	Family & Area	School, Family & Area
SCHOOL							
pupil-teacher ratio	**0.005** (**0.001**)			**0.004** (**0.001**)	**0.005** (**0.001**)		**0.005** (**0.001**)
disadvantaged pupils (%)	0.000 (0.000)			0.000 (0.000)	0.000 (0.000)		0.000 (0.000)
tenth grade drop-out rate	**0.001** (**0.000**)			**0.001** (**0.000**)	**0.001** (**0.000**)		**0.001** (**0.000**)
teachers (%) with higher qualifications	-0.000 (-0.000)			-0.000 (0.000)	-0.000 (0.000)		-0.000 (0.000)
FAMILY							
mother's education		-0.005 (**0.003**)		-0.004 (0.003)		-0.005 (**0.003**)	-0.003 (0.003)
number of siblings		**0.006** (**0.003**)		**0.007** (**0.003**)		**0.007** (**0.003**)	**0.007** (**0.003**)
father's education		**-0.009** (**0.002**)		**-0.008** (**0.002**)		**-0.009** (**0.002**)	**-0.008** (**0.002**)
lone parent family		0.008 (0.020)		0.003 (0.020)		0.009 (0.020)	0.004 (0.020)
AREA							
median family income			0.000 (**0.000**)		0.000 (**0.000**)	0.000 (**0.000**)	-0.000 (**0.000**)
unemployment rate			-0.001 (0.004)		0.006 (0.004)	-0.001 (0.004)	-0.004 (0.004)
number of observations	1011	1011	1011	1011	1011	1011	1011

Coefficients in bold if significant: $p < 0.10$.

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Table 4d: White women's poverty risk

	School	Family	Area	School & Family	School & Area	Family & Area	School, Family & Area
SCHOOL							
pupil-teacher ratio	**-0.003** (**0.002**)			**-0.003** (**0.002**)	**-0.003** (**0.002**)		**-0.003** (**0.002**)
disadvantaged pupils (%)	**0.001** (**0.000**)			0.001 (0.000)	**0.001** (**0.001**)		0.001 (0.000)
tenth grade drop-out rate	0.001 (0.000)			0.001 (0.000)	**0.001** (**0.000**)		0.001 (0.000)
teachers (%) with higher qualifications	0.000 (0.000)			0.000 (0.000)	0.000 (0.000)		0.000 (0.000)
FAMILY							
mother's education		**-0.015** (**0.004**)		**-0.014** (**0.004**)		**-0.015** (**0.004**)	**-0.014** (**0.004**)
number of siblings		**0.013** (**0.004**)		**0.013** (**0.004**)		**0.013** (**0.004**)	**0.013** (**0.004**)
father's education		**-0.008** (**0.003**)		**-0.008** (**0.003**)		**-0.007** (**0.003**)	**-0.007** (**0.003**)
lone parent family		**0.045** (**0.023**)		**0.046** (**0.023**)		**0.045** (**0.023**)	**0.046** (**0.023**)
AREA							
median family income			**-0.000** (**0.000**)		0.000 (0.000)	-0.000 (0.000)	-0.000 (0.000)
unemployment rate			0.002 (0.005)		-0.001 (0.005)	0.001 (0.004)	0.001 (0.004)
number of observations	1080	1080	1080	1080	1080	1080	1080

Coefficients in bold if significant: $p < 0.10$.

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6. Conclusions

This paper examines the relationships between adult economic outcomes and three key influences during adolescence: schooling, family background and local area. We use a rich dataset, the NLSY, to tease out how these background factors may impact, separately and together, in their contribution to later earnings and poverty for young adults in the US.

In general, family, school and area characteristics each exhibit a significant association with men's and women's outcomes. Family factors are found to have the strongest explanatory power, with schooling variables being the next most important and area has the smallest effect (which does not appear to be significant for women's poverty).

Whilst this ranking of the relative importance of each background influence remains when controlling for the complete range of background influences, area does not always add significantly in explaining the variance of long run adult outcomes, over and above family and school factors. This could be because our measure of area is fairly aggregated (average population size of 80,000). It is also perhaps indicative of the correlation between the characteristics of the areas where people live and those of their family and school.

An extensive 'overlap' between the three domains is clearly present: for example, the explanatory power of family and school for men's earnings is 12% and 7% respectively, but only amounts to 13% for the two sets combined. This tells us that, for our sample at least, those who have bad earnings and poverty prospects are disadvantaged in terms of all of three key background influences: family, school and area. The impact of the 'start in life' one gets from one's family is exacerbated by the school one attends and the area where one resides as an adolescent.

One conclusion therefore is that all such analyses need to allow for this correlation between the three domains, by controlling for the full range of background characteristics. When we do so, family and school still independently matter but area generally does not. To the extent that area matters it appears to be more important for men than women, as is

also true for school characteristics. Relatively then, family has a stronger role for women's than men's outcomes.

The findings on the explanatory power of the sets of influences - family, school and area - are backed up by significant and expected relationships with particular variables.

There are several noteworthy implications of our findings. Firstly, with reference to the literature on the contribution of schooling discussed in the introduction, we find that school characteristics have a significant link with men's and women's outcomes, using school level data. This is however based on a broader set of school indicators than is typically used.

Our results on men's and women's poverty status in adulthood are an important addition to the range of outcomes normally considered. We find that the picture is remarkably similar to that for earnings, in that family background has the largest impact followed by schooling, with area having the weakest effect. It is interesting that we show that there is a robust area effect for men's poverty, not found for women's poverty nor male or female earnings.

If the significant associations we find are indicative of causal relationships there is some evidence of an independent effect of all three background influences. This is heartening from a policy perspective. Our evidence is that the advantage or disadvantage associated with family background is currently compounded by young people's experience of school and local area. But the fact that all three domains matter independently and are to some extent susceptible to policy interventions suggests that there is a great deal of scope for policy instruments to level out the playing field for later life chances.

Appendix

Table A1: Means and number of individuals for analysis variables

	black men	white men	black women	white women
Intermediate sample				
age in 1979	16.66 (1180)	**16.71 (2553)**	16.75 (1155)	16.80 (2517)
real earnings at age 25	**15,828.55 (1003)**	23,530.79 (2086)	10,875.46 (1013)	14,503.28 (2153)
poverty status at age 25	0.20 (788)	0.09 (1855)	0.37 (849)	**0.14 (1952)**
Final sample				
age in 1979	16.81 (179)	**16.90 (769)**	16.89 (202)	16.91 (793)
real earnings at age 25	**20,318.91 (167)**	24,986.66 (724)	12,353.49 (195)	15,856.13 (778)
poverty status at age 25	0.13 (144)	0.08 (666)	0.32 (176)	**0.10 (730)**

Figures in bold: means of variable for intermediate and final samples significantly different at 95% level.

Appendix Table A2

	pupil teacher ratio	books per pupil	teachers (%) with higher qualifications	beginner teacher's salary	number of pupils in the school	disadvantaged pupils (%)	tenth grade drop out rate	black pupils (%)	hispanic pupils (%)	female pupils (%)	attendance (%)	mother's education	father's education	mother not in work	father not in work	female head is a professional
pupil teacher ratio	1.000															
books per pupil	0.184	1.000														
teachers (%) with higher qualifications	0.065	0.171	1.000													
beginner teacher's salary	0.135	0.133	0.265	1.000												
number of pupils in the school	0.357	0.350	0.298	0.314	1.000											
disadvantaged pupils (%)	0.080	0.010	0.147	0.098	0.089	1.000										
tenth grade drop out rate	0.041	0.001	0.179	0.018	0.053	0.312	1.000									
black pupils (%)	0.109	0.112	0.053	0.124	0.203	0.445	0.138	1.000								
hispanic pupils (%)	0.058	0.054	0.078	0.054	0.151	0.092	0.089	0.035	1.000							
female pupils (%)	0.014	0.011	0.088	0.065	0.055	0.023	0.038	0.120	0.031	1.000						
attendance (%)	0.066	0.006	0.094	0.225	0.114	0.060	0.138	0.202	0.077	0.034	1.000					
mother's education	0.048	0.058	0.170	0.045	0.124	0.210	0.121	0.139	0.014	0.001	0.001	1.000				
father's education	0.068	0.018	0.189	0.041	0.132	0.273	0.160	0.163	0.006	0.016	0.033	0.503	1.000			
mother not in work	0.001	0.024	0.040	0.008	0.050	0.041	0.024	0.005	0.016	0.011	0.027	0.154	0.098	1.000		
father not in work	0.030	0.002	0.096	0.030	0.071	0.110	0.014	0.028	0.007	0.011	0.012	0.229	0.261	0.097	1.000	
female head is a professional	0.008	0.021	0.078	0.009	0.067	0.064	0.063	0.028	0.015	0.009	0.029	0.394	0.232	0.148	0.040	1.000
male head is a professional	0.080	0.042	0.092	0.009	0.068	0.095	0.088	0.098	0.013	0.002	0.021	0.251	0.420	0.035	0.090	0.123
lone parent	0.029	0.060	0.035	0.017	0.041	0.022	0.029	0.066	0.045	0.008	0.044	0.009	0.006	0.056	0.007	0.006

family																
number of siblings	0 029	0 053	0 037	0 036	0 031	0 199	0 071	0 248	0 015	0 015	-0 062	-0 282	-0 324	0 152	0 122	0 094
family receive magazines	0 103	0 053	0 054	0 061	0 004	0 176	0 116	0 193	0 031	0 011	0 047	0 311	0 309	0 077	0 126	0 142
family receive newspapers	0 069	0 006	0 114	0 007	0 070	0 177	0 164	0 128	-0 051	-0 002	0 016	0 236	0 227	0 068	0 097	0 066
religious (Baptist)	0 104	0 066	0 100	0 020	0 025	0 269	0 155	0 367	0 014	0 040	-0 073	0 152	0 245	0 020	0 057	0 057
median family income	0 013	0 153	0 409	0 372	0 304	0 432	0 182	0 108	0 044	0 023	-0 060	0 254	0 321	0 069	0 138	0 113
family poverty rate	0 032	0 104	0 257	0 239	0 173	0 537	0 201	0 280	0 016	0 021	0 023	0 243	0 317	0 074	0 151	0 067
unemployment rate	0 104	0 017	-0 087	0 081	0 014	0 271	0 102	0 012	0 139	0 054	-0 082	-0 039	0 070	0 073	0 040	0 060
crime rate	0 167	0 160	0 220	0 308	0 424	0 177	-0 051	0 167	0 193	0 002	-0 175	0 168	0 205	0 043	0 118	0 054
marriage rate	0 009	-0 039	-0 091	-0 052	0 008	0 119	0 084	0 188	-0 041	0 028	0 016	-0 071	-0 098	0 010	0 019	-0 031
divorce rate	0 251	0 114	0 096	0 029	0 207	0 009	0 041	0 137	0 083	0 003	-0 069	0 032	0 036	-0 032	0 035	0 019
residents living in an urban area (%)	0 065	0 203	0 361	0 321	0 428	0 219	0 132	0 109	0 171	0 008	-0 087	0 232	0 297	0 036	0 125	0 071
black residents (%)	0 115	0 154	0 094	0 043	0 192	0 285	0 054	0 655	0 059	0 094	-0 059	-0 089	-0 104	0 036	0 022	0 003
female-headed families (%)	0 115	0 120	0 118	0 020	0 215	0 293	0 074	0 491	0 046	0 064	0 096	0 057	0 056	0 018	0 038	0 019

Appendix Table A2 continued

	male head is a professional	lone parent family	number of siblings	family receive magazines	family receive newspapers	religious (Baptist)	median family income	family poverty rate	unemployment rate	crime rate	marriage rate	divorce rate	residents living in an urban area (%)	black residents (%)	female headed families (%)
male head is a professional	1.000														
lone parent family	0.100	1.000													
number of siblings	0.087	0.046	1.000												
family receive magazines	0.169	0.096	0.203	1.000											
family receive newspapers	0.083	0.104	0.135	0.283	1.000										
religious (Baptist)	0.113	0.044	0.156	0.208	0.195	1.000									
median family income	0.151	0.006	0.121	0.129	0.235	0.315	1.000								
family poverty rate	0.127	0.008	0.141	0.166	0.272	0.373	0.854	1.000							
unemployment rate	0.043	0.022	0.062	0.054	0.078	0.021	0.316	0.347	1.000						
crime rate	0.097	0.097	0.041	0.040	0.100	0.057	0.485	0.408	0.118	1.000					
marriage rate	0.033	0.076	0.139	0.005	0.019	0.128	0.199	0.170	0.031	0.002	1.000				
divorce rate	0.017	0.043	0.056	0.048	0.030	0.200	0.051	0.028	0.195	0.456	0.128	1.000			
residents living in an urban area (%)	0.127	0.025	0.055	0.074	0.205	0.180	0.685	0.579	0.053	0.762	0.020	0.284	1.000		
black residents (%)	0.051	0.055	0.171	0.142	0.104	0.301	0.201	0.450	0.085	0.240	0.261	0.194	0.160	1.000	
female headed families (%)	0.045	0.068	0.083	0.117	0.086	0.224	0.213	0.401	0.175	0.300	0.086	0.195	0.252	0.798	1.000

Correlations for the final sample of 1,943 individuals.

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Table A3: Descriptives for outcome variables (final sample)

	black men	white men	black women	white women
earnings capacity				
mean	14,804	21,977	7,129	11,127
median	12,284	19,728	6,519	9,861
standard deviation	12,758	15,301	10,181	13,140
number of individuals	(179)	(769)	(202)	(793)
poverty risk				
mean	0.206	0.125	0.333	0.140
median	0.091	0.058	0.161	0.064
standard deviation	0.257	0.204	0.361	0.227
number of individuals	(179)	(769)	(202)	(793)

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